TECHNICAL REPORT 2003-007

Single Integrated Air Picture (SIAP)
Lessons Learned

February 2003

SINGLE INTEGRATED AIR PICTURE (SIAP)
System Engineering
Task Force (SE TF)

1931 Jefferson Davis Highway
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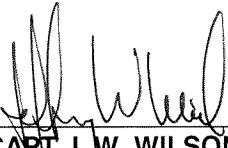
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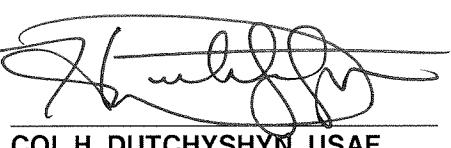
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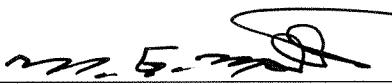
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FOREWORD

List of Contributors

The Single Integrated Air Picture Lessons Learned Technical Report is the result of collective efforts of members of the SIAP Lessons Learned Working Group, who drafted the content of the report through several face-to-face meetings, teleconferences, and electronic mail exchanges spanning the period from February 2002 through January 2003. The following individuals contributed to the report through their participation in either live or virtual meetings of the Working Group:

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EXECUTIVE SUMMARY

PROBLEM

The Single Integrated Air Picture (SIAP) System Engineering Task Force (SE TF) requires the capability to maintain and provide system interoperability information to support joint interoperability planning, testing, and forensics engineering. This Technical Report (TR) describes and discusses the SIAP SE TF's development of a central Lessons Learned Knowledge Base (LLKB) to address this requirement.

OBJECTIVES

This TR outlines the development process, procedures, and technical capabilities of the LLKB. It addresses the process to develop and assess technical requirements for an initial desktop prototype and an unclassified on-line website, culminating in the delivery of a Secret Internet Protocol Router Network (SIPRN)-based LLKB capability. It outlines the plan of action followed to implement this capability to support the SIAP Analysis Team (SAT) and the greater SIAP community.

APPROACH

The SIAP Lessons Learned Working Group (WG) initiated prototype development as a consequence of extensive liaison with joint and service lessons learned database subject matter experts (SMEs). Feedback from these SMEs suggested that an initial stand-alone, PC-based database would be the most effective first step, mitigating cost, schedule and technical concerns. The WG completed Phase 1 on schedule and delivered the stand-alone desktop application as the initial LLKB capability. Phase 2 encompassed transition of the prototype to an unclassified website to solicit user review and inputs to be incorporated into the design of the objective LLKB system. Feedback from SIAP TF, Service and Agency representatives served as the foundation for the classified LLKB capability. Phase 3 completed the migration of the Phase 2 website to the SIPRN and delivered a classified SIAP lessons learned and knowledge repository. Phase 4 elicited further feedback added additional capabilities not yet integrated into the LLKB. The WG delivered the final LLKB capability at the conclusion of Phase 4 in January 2003.

FINDINGS

The lessons learned WG examined the strengths and weaknesses of the various database efforts and experienced very candid, insightful discussions and technical exchanges with the joint and service lessons learned SMEs. After an extensive survey of current Service and agency lessons learned efforts, a general roadmap to objective

capability was outlined. Due to the complex nature of database development and the intricacies of forensic engineering requirements of the SAT, the implementation plan first focused on delivery of a "first step" prototype database, which is referred to as Phase 1. The LL WG required extensive SME and Service liaison to scope the initial data fields and structure. Once the initial configuration was determined, feedback and modification requests were used to scope follow-on versions of the LLKB.

CONCLUSIONS

The WG addressed the SIAP SE TF, Service and Agency requirements by developing an initial capability to maintain and provide system capability information to support joint interoperability planning, testing, and forensics engineering. Building on this first step, the WG continued to implement the four-phased implementation of the LLKB, producing a classified SIAP lessons learned and knowledge repository.

RECOMMENDATIONS

The WG will continue to solicit feedback for additional LLKB capability from the SIAP SE TF and Service/Agency SMEs. The WG will also continue to integrate the LLKB into SIAP SE TF plans, processes and procedures to enhance the interoperability and warfighting capabilities of joint and service air warfare systems.

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1 INTRODUCTION

As stated in the Single Integrated Air Picture (SIAP) Analysis Team Roles and Responsibilities, the SIAP Lessons Learned Knowledge Base (LLKB) is being developed to support the disciplined SIAP system engineering process by facilitating root cause analysis and forensic engineering, as well as serving as a knowledge repository for SIAP-related information. The LLKB centralizes the collection of documented problems and assessments from observed analysis events to assist the SIAP System Engineering (SE) Task Force (TF) in its efforts to improve the air picture. The LLKB will assist the SIAP Analysis Team (SAT) in conducting forensics engineering throughout the various SIAP analytical venues and events. The SIAP LLKB will enhance problem identification, tracking and resolution and supports results comparison for SIAP related exercises/critical experiments, Hardware-in-the-Loop (HWIL), Operator-in-the-Loop (OITL), and other Modeling and Simulation (M&S) activities for the systems engineering decision making process.

The LLKB system enables the knowledge gained from past experience to be applied to current and future endeavors. Its intent is to avoid the repetition of past failures and mishaps, as well as the ability to share observations and best practices. Through this resource, the SIAP SE TF seeks to facilitate the early incorporation of safety, reliability, maintainability, and interoperability into the design of air system hardware, software, and procedures.

2 APPROACH

The LLKB prototype development began with extensive SIAP LL WG liaison with Joint, Service and Agency lessons learned database Subject Matter Experts (SMEs). There are current Joint, Service and Agency efforts that have been thoroughly explored by the LL WG before formulating the LLKB implementation plan. Understanding these existing efforts contributed significant knowledge and insight into the SIAP LLKB prototype development effort.

3 SCOPE

This Technical Report (TR) outlines the processes, procedures and approach the SIAP LL Working Group (WG) followed in developing the LLKB. This TR also documents the technical specifications of the prototype and outlines an approach for integrating this capability into the SIAP SE TF process. Issues concerning the process for developing and populating the LLKB are introduced but not thoroughly defined in this TR.

4 SUMMARY OF ACTIVITY

4.1 Initial Fact Finding Visits

4.1.1 Issues Tracking Board (ITB)/Missile Defense Agency (MDA)

Discussions were held with MDA representatives that resulted in a demonstration of the ITB database developed for the MDA. The ITB is an internet-based application that operates on standard HTML/JavaScript technologies for the client GUI (Graphical User Interface). The server uses a Linux operating system and information is stored in a Sybase version database. The main features of the ITB database are that it allows users to log-in, propose new issues, search existing issues using a variety of attributes, create reports of existing issues, and upload supporting documents.

Concerns were raised by WG members as to whether the ITB database structure and programs would be compatible with SIAP LLKB objectives: software and licensing issues, compatibility issues with ultimate LLKB host, and training issues with developers. The reorganization of MDA into National Teams was also viewed as a possible impediment to implementation. The WG determined that leveraging the ITB would result in a high-risk proposition for SIAP because of these and other issues. As a result, LLKB deliverables and schedule would likely not be completed on time while assessing these risks, awaiting ITB liaison approval, and getting the necessary commitment for technical support.

4.1.2 Air Force Center for Knowledge Sharing and Lessons Learned (AFCKSLL)

Fact finding liaison with AFCKSLL representatives primarily focused on their database structure for possible adaption and use in the LLKB effort. The AFCKSLL uses an internet application developed with standard HTML/JavaScript technologies for the client Graphical User Interface (GUI). The server uses a Windows NT 4.0 operating system and Internet Information Service 5. Active Server Pages (ASP), the language used for the middleware logic and SQL Server 7, is the database used to store lessons learned information. The main features of the website are that it allows users to log-in, propose new issues, search existing issues using a variety of attributes, create reports of existing issues, and provides configuration control of issues using sharing options and email notification. The issues reside in a working area until the holder of the issue publishes it to the public domain. One drawback to the database was the lack of a file upload capability.

The AFCKSLL uses Microsoft products for website development and hosting, which the SIAP SE TF is familiar with, and their database seemed to be flexible and simpler to operate while still providing a robust capability. The AFCKSLL is also developing a form in MS Word with embedded XML tags, which will allow an issue to be written offline and later uploaded and read directly into the database. The embedded XML tags however require that users upgrade to Office XP. The search feature was easy to use and allowed users to "drill down" to the desired level. The tracking process used to keep

people in the loop sends out emails to the appropriate points of contact when a record is updated. It also provides for feedback and accountability of issues that are being worked. There was not an elaborate security front-end on the classified site like the ITB had built. Any user on the SIPRN only has to register and can gain access. They also have an unclassified site that is a mirror image of their SIPRN site but without any listing of classified information. A Secret Internet Protocol Router Network (SIPRN) address is provided as a placeholder for classified information.

4.1.3 Joint Center for Lessons Learned (JCLL)

The WG also initiated discussions with JCLL, which were very insightful into current Joint Forces Command (JFCOM) lessons learned efforts. Their system is currently being re-developed and they are also rewriting their processes for incorporation it into a joint lessons learned plan. Their database has experienced delays because of the need to convert the basic AFCKSLL structure from SQL Server to Oracle. It was also learned that the Defense Information Services Agency (DISA) might begin to require classified database sites on the SIPRN to have additional security features. JCLL relies on the Joint/Service communities to submit LL records after an exercise, unlike the Army, which has the personnel to record issues on site as they happen. Analysts at JCLL then sort through submissions and determine which records are appropriate for the JCLL database.

4.1.4 Capabilities and Limitations (C & L) Database

Extensive liaison with personnel from the Port Hueneme Division (PHD), Naval Surface Warfare Center (NSWC), centered around the Navy's C & L database and possible linkage with the SIAP LLKB. The C & L database supports Navy battlegroup preparation by defining the proper linkages between all of the different systems. It detailed each system's strengths and weaknesses, as well as identifying the "bugs" that arise when certain systems interact and the known workarounds. The "bugs" are submitted by the respective systems' program office. The database mainly consists of a large number of HTML pages linked hierarchically and cross-linked. It also provides some links to other supporting documents. These links also help ensure traceability back to the original sources for the information.

The SIAP SE TF is leveraging the C& L effort and provided funds for PHD NSWC to begin development of a C & L database for the SIAP SE to include all joint air warfare systems. As a result of this synergy, it was determined that a strong linkage between the SIAP LLKB and the C & L database should be established and maintained. This relationship has provided the WG with valuable information and insight into many areas of the LLKB development and implementation. PHD NSWC personnel also offered to host the LLKB on their SIPRN server along side the C & L database.

Upon completion of the fact-finding effort, the WG formulated a draft implementation plan for LLKB development and solicited pointed feedback for the Services. The WG resolved comments and feedback, revising implementation plan accordingly. This effort

included documenting functional requirements, database interfaces, and data field definitions and descriptions. The WG socialized recommendations to determine the optimal technical specifications as well as the process and procedures for updating entries/data residing in the LLKB.

4.2 LLKB Phase 1 – Desktop Prototype Development

The lessons learned WG focused on a first step towards the long-term goal of an on-line, interactive LLKB. The WG developed the Phase 1 LLKB as a stand-alone desktop application that allowed exploration of initial data structures and GUI features of the SIAP LLKB. The screens and features of this prototype were developed to match the abilities that are possible in an online application, the ultimate objective. The prototype allowed additions of new lessons learned to a database, search for lessons learned using various criteria, and creation of simple reports. In general, the prototype supported the priorities articulated by the Service and Agency representatives in a survey of desired capabilities completed in April 2002. The final results of the survey are documented in Appendix B.

The WG designed and developed the database using Access 2002. Based on the information requirements of the WG, tables and fields were designed and created. For each field the name, data type, size, indexing, description, etc. properties are specified for the application GUI.

4.2.1 Prototype GUI

The prototype GUI was developed using Access 2002, taking advantage of its internal Visual Basic for Applications programming capabilities. The GUI design was based on the Department of Energy's Lessons Learned website interface. This section describes the SIAP LLKB prototype's various screens and controls.

The Main Screen is the entry point into the SIAP LLKB application. The Main Screen includes the following:

- SIAP LLKB logo
- Input New Lesson button
- Browse Lessons button
- Search Lessons button
- What's New button
- Point of Contact (POC) button
- Links button
- Exit button

- Disclosure statement
- Version number and date
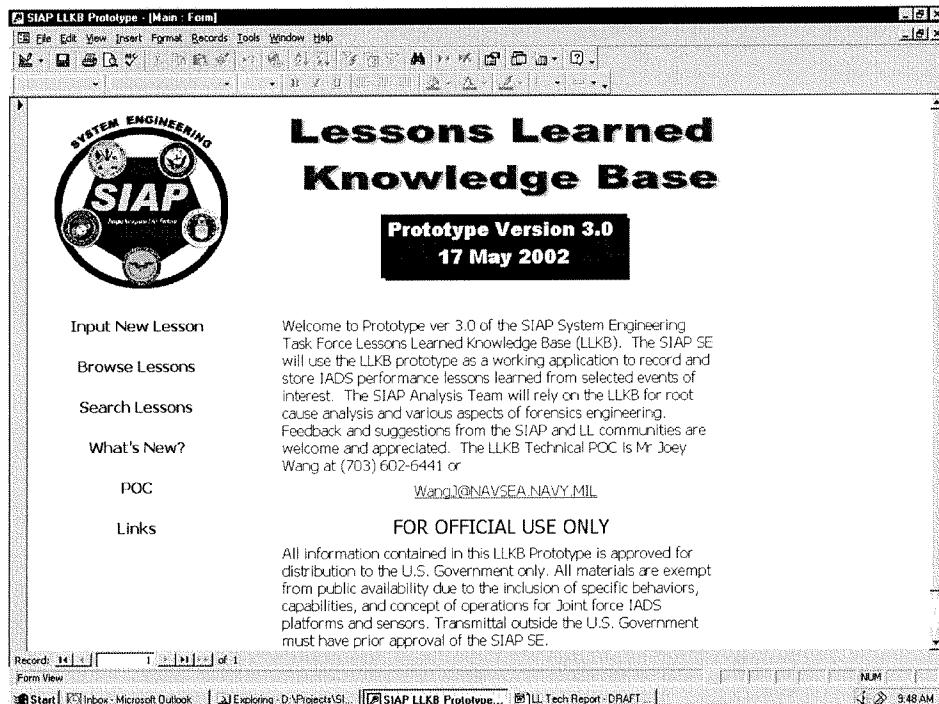
FIGURE 1. LLKB PROTOTYPE - MAIN SCREEN

The Input New Lesson screen allows a user to submit a new record to the SIAP LLKB. It will also validate information entered before creating a new record. The Input New Lesson screen includes four tabs that allow input for different types of information about the lesson. These tabs are described below:

1. General Information – inputs for record title, status, and lesson service
2. Observation Data – inputs that describe the observation
3. SIAP Information – inputs for SIAP related fields
4. POC – inputs for associating a point of contact with the record

A Submit Button validates the input information and creates a new record if valid. A Close Button closes screen and returns focus to the Main Screen.

The Browse Lessons screen (see Figure 1) allows the user to view an entire record. From this screen the user can edit the inputs for the currently viewed record. He can also view the next record, previous record, first record, or last record in the database.

The Search Lessons screen allows the user to conduct a query for a particular set of records based on user-selected criteria. Users can search based on: status, priority, exercise/event name, exercise/event date, and word search on all text fields.   The following buttons are provided to do specific actions:

- Search – View Records button – Conducts the search and presents the results using the Browse Lessons screen.
- Search – View Report button – Conducts the search and presents the results using an Access report.
- Clear button – Clears the criteria input boxes.
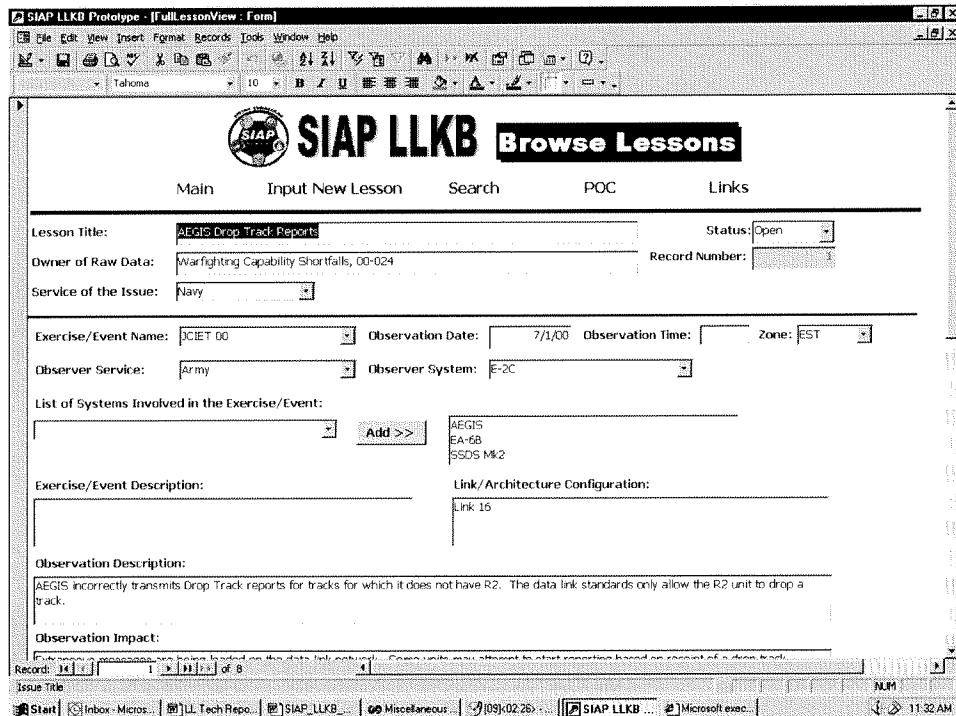
FIGURE 2. LLKB PROTOTYPE - BROWSE LESSONS SCREEN

The What's New screen allows the user to conduct a query for recent lessons learned. This date search is based on the entry date for the lesson. The following buttons are provided to do specific actions:

- Search – View Records button – Conducts the search and presents the results using the Browse Lessons screen.
- Search – View Report button – Conducts the search and presents the results using an Access report.
- Clear button – Clears the criteria input boxes.

The POC screen allows the user to view and search for a point of contact stored in the LLKB. The "Show POC List" button produces a report of all POC stored in the LLKB.

The Links screen contains a list of hyperlinks to various web sites that may be of interest to the SIAP community.

On all of the screens there is a menu bar of buttons across the top that gives access to the other screens in the LLKB.

4.2.2 Prototype Documentation

A Database Dictionary, created in MicroSoft Word format, was provided documenting the database's design and functionality.

4.2.3 Prototype Testing

The WG completed testing at various steps along the life cycle of the project. The SIAP SE TF approved the resulting data structure. The WG members made the overall design and feature list available to the SIAP SE TF members, as well as service and agency representatives, by placing a copy on the official SIAP website.

4.2.4 Training

The developers held a training session for the initial users to educate on the use of the SIAP LLKB prototype. Suggestions and comments were solicited and many were incorporated into the design requirements for follow on phases.

4.3 LLKB Phase 2 - Unclassified Website

The Phase 2 LLKB website application leveraged the data structures and GUI features of the prototype, as well as additional capabilities and features, and presented them in a web-based environment. The Phase 2 website provided for the quick addition of new records to the database on line, a search for lessons learned using various criteria, and is able to create simple reports of the records contained in the database. The Phase 2 LLKB also contained a page of links to various other Service and Agency lessons learned sites of interest.

The Phase 2 website was developed in standard HTML and JavaScript to present the web interface. ASP 2.5 is used to interface with the database on the server. It provided an opportunity for members of the SAT, Services and Agencies to review the LLKB and provide feedback to the lessons learned WG. Suggestions, changes and modifications to the LLKB were vetted through the WG and approved modifications were incorporated into the follow-on LLKB system.

The Phase 2 website was also used as part of the "proof of process" opportunity for the SAT provided by the Millennium Challenge '02 exercise held in September 2002. A limited number of Test Observation Reports (TORs) were selected, adjudicated on site, and entered into the LLKB to test the feasibility of the proposed process documented in section 4.6 for collection of SIAP lessons learned at live events.

4.4 LLKB Phase 3 - SIPRN Website

Phase 3 of the LLKB implementation was accomplished with the successful migration of the unclassified Phase 2 website application on to a SIPRN host server. The classified LLKB website contains all of the Phase 2 capability with additional features coded as a result of feedback from the unclassified website. One such additional capability is the resource upload feature, which allows users to upload electronic materials of interest to a repository for easy access by the SIAP community. These files can also be linked to appropriate lessons to give users additional information regarding a specific exercise, event, or analysis effort. The Phase 3 LLKB, like its unclassified predecessor, also contains a page of links to various other service and agency lessons learned sites of interest. These links are limited to SIPRN hosted sites only and are subject to the security regulations of each individual website. The Phase 3 LLKB also allows for the SIAP SE TF to archive old or outdated records.

The WG developed the requirement for additional website access levels to restrict functions for unauthorized users. There are 3 website access levels coded into the LLKB:

- General Access – Any user cleared to access a SIPRN terminal can view the SIAP LLKB website. At this level of access, the user is limited to browsing and conducting basic searches of the LLKB records.
- SIAP/Service SME Access – Users are required to use a login and password to enable specified function above the General access level. Some of the additional functions include the ability to submit a lesson for review, upload/download resources, edit current lessons, etc. The login and password for this level of access will be provided only upon approval by the SIAP SE TF.
- SIAP SE TF Access – Users are required to provide a login and password to access this level of LLKB functionality. The SIAP SE TF can access all functions of the lower tiers and additionally are given administrator privileges to approve submitted lessons and resources, edit lists and drop-down tables, change passwords, archive and delete records, etc. This administrator-level access will be reserved for SIAP SE TF personnel only in order to maintain configuration control of the website and database.

4.5 LLKB Phase 4 – Additional Capability

The WG allowed for the LLKB to be used and tested during Phase 4 of the LLKB implementation. This enabled the WG to vet and incorporate suggested changes to the LLKB while continuing to give the website additional capabilities. Any suggested changes or modifications to the LLKB may be submitted to the LL WG chair for consideration. If approved by the WG, post-Phase 4 changes requested to the LLKB will be incorporated as time and resources allow. A software design document was delivered upon the completion of Phase 4 that describes the technical specification and functionality of the objective SIAP LLKB system. This document will be updated as changed are coded into the LLKB design throughout it's life cycle.

4.6 LLKB Support of the SIAP Analysis Team (SAT)

The process by which observed Link and systems deficiencies and problems will be considered for lesson learned candidate status and analysis is delineated in the following process diagram and explained in this section. The LLKB assists the SAT in forensics engineering endeavors to find the root cause(s) of observed deficiencies and problems and document findings.
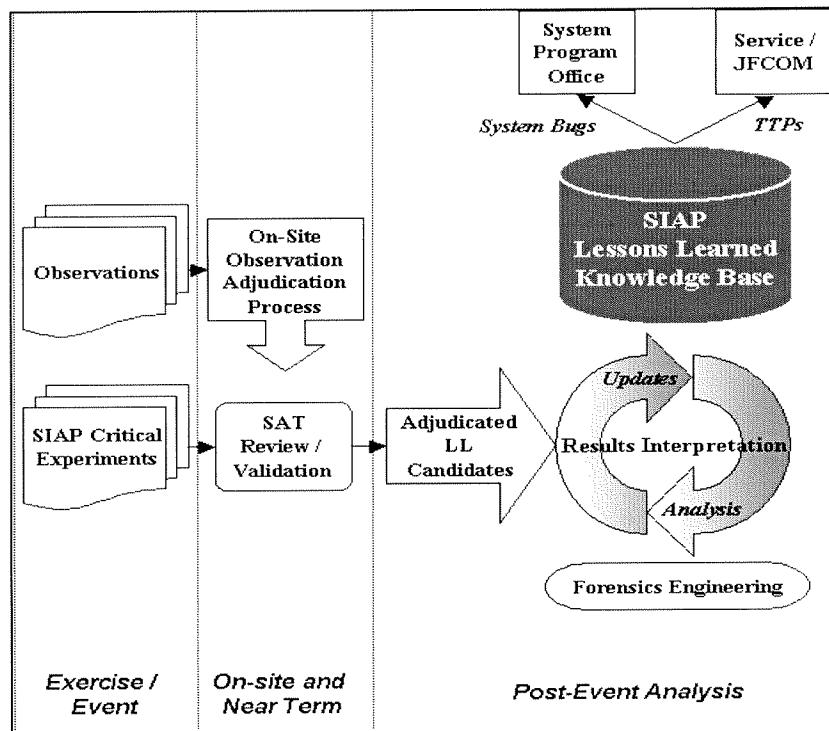
FIGURE 3. PROPOSED SIAP LESSONS LEARNED PROCESS

4.6.1 Exercise / Event

One of the goals of the Millennium Challenge 02 (MC 02) was to establish a process for Joint Interoperability Test Center (JITC), Joint Combat Identification Evaluation Test (JCIET), and the SAT to conduct observation recording, tracking, and adjudication. In parallel, SIAP used the venue as a test scenario for the Lessons Learned process at SIAP sponsored events. Due to limited funding and resources for MC 02, the complete TOR process (generating, exchanging, tracking and adjudicating) discussed in the MC 02 Data Management and Analysis Plan (DMAP) was conducted to a limited degree (i.e., a handful of selected TORs) to demonstrate and assess the observation collection, adjudication, and entry process. This is a notional process that will be matured in the weeks after MC 02 to meet JCIET, JITC, and SAT requirements for future events. The TOR process will be leveraged in order to provide input to the lessons learned process.

JITC, JCIET, and system representatives will discuss and adjudicate all TOR and Formal Analysis Report (FAR) analysis results. Once the TOR/FARs are fully adjudicated, JITC will create a synopsis of the anomaly and analysis based on the information contained in the TORs and FARs and subsequent discussions. JITC, in close coordination with JCIET, will include a MIL-STD conformance section within its report for MC 02.

After calculation of the attributes, JCIET will lead an effort to determine the root causes of SIAP deficiencies. For example, for instances when the picture is not common at all systems, the underlying reasons for these commonality deficiencies will be determined. To do this, tracks available to the operator for surveillance systems in the data network will be matched to Time Space Position Indicator (TSPI). The results of this match will assign tracks held by systems to one or more TSPI aircraft. Comparisons between systems and between a system and TSPI can then be made in accordance with SIAP SE defined attributes.

4.6.2 On-site and Near Term Activities

SIAP Critical Experiments will be tracked on-site at the event as well as during the root-cause phase of the analysis. TORs related to Integrated Air Defense System (IADS) performance assessment will be reviewed and adjudicated during and after the event as discussed in the MC '02 DMAP. JITC and SAT representatives will coordinate to develop a schedule for adjudicating TORs and identifying SIAP-related lessons learned candidates to the SIAP SE TF for inclusion in the SIAP LLKB.

4.6.3 Post-Event analysis Process

After the lessons learned candidates have been adjudicated and entered into the LLKB, updating responsibility for each record will be given to the appropriate SME or SIAP point of contact. The POC for each record is responsible for updating designated candidate records through the post analysis process including Block related activities, forensics engineering / root cause analysis, and the interpretation of analysis results. After sufficient analysis is performed on the candidate, it will be binned into one of the following categories for resolution:

- "Bugs" – specific system related issues usually caused by a failure to properly implement a requirement. "Bugs" are returned to the respective program offices for action.
- "Structural" – root-cause issues shared by two or more systems usually caused by improperly derived or omitted operational requirements. "Structural" Theater Air Warfare issues are forwarded to the SIAP SE TF for prioritization, engineering analysis, and solution recommendations.
- "Tactics, Techniques, and Procedures (TTPs)" – issues identifying human error or faulty procedures as a possible source for the deficiency, including training. Clearly defined TTP issues must be returned to the warfighting community (i.e., JFCOM for action).

- "Non-repeatable" – these are issues not seen by anyone else or after review; they are impossible to replicate or analyze due to missing or wrong information.

5   FINDINGS

From the information gathered from the discussions with service and agency lessons learned SMEs, the WG advocated the implementation of the LLKB in four distinct but integrated phases to mitigate scheduling and technical risk. Phase 1 developed a prototype desktop database capability. Phase 2 produced an unclassified, on-line version of the knowledge base based upon the Phase 1 product. Phase 3 migrated the Phase 2 website, along with WG approved modifications, onto the SIPRN. Phase 4 sought additional feedback and added desired capabilities not yet integrated into the LLKB. The operational SIAP LLKB was delivered upon completion of Phase 4 for SIAP SE TF utilization.

6   CONCLUSION

The classified LLKB is currently hosted at PHD NSWC due to the established relationship between the SIAP SE TF and PHD NSWC on the Caps and Lims effort. PHD NSWC states that LLKB hosting and routine server maintenance is within the current scope of the current SOW with the SIAP SE TF. The WG will investigate the possibility of hosting the LLKB at the SIAP SE TF once their SIPRN connections and terminals are installed and operational in calendar year 2003.

The classified LLKB will assist the SIAP SE TF in its mission to identify interoperability deficiencies and solutions to air picture systems, resulting in an enhanced warfighting capability for joint forces. It will also serve to inform the greater SIAP community of known air picture deficiencies and possible solutions where known.

7   RECOMMENDATION

The WG will continue to integrate the LLKB into the SIAP SE TF processes and procedures to document air system interoperability problems and solutions. The WG will also solicit user feedback from SIAP SE TF, Service, and Agency SMEs to make appropriate modifications to the LLKB as needed. This feedback will serve to adjust the LLKB to best serve the needs of the SIAP SE TF and the greater SIAP community.

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SIAP System Engineering Management Plan (SEMP), July 2002

Millennium Challenge 2002 Data Management and Analysis Plan (DMAP)

SIAP Integrated Assessment Plan (IAP) Appendix C: Block 1 Analysis, June 2002

APPENDIX A: Acronym List

SIAP Lessons Learned Acronym List

AFCKSLL	Air Force Center for Knowledge Sharing and Lessons Learned
ASP	Active Server Pages
DMAP	Data Management and Analysis Plan
FAR	Formal Analysis Report
GUI	Graphical User Interface
HWIL	Hardware-in-the-Loop
IADS	Integrated Air Defense System
ITB	Issues Tracking Board
JCIET	Joint Combat Identification Evaluation Test
JCLL	Joint Center for Lessons Learned
JTIC	Joint Interoperability Test Center
LLKB	Lessons Learned Knowledge Base
MC	Millennium Challenge
MDA	Missile Defense Agency
MIL-STD	Military Standard
M&S	Modeling and Simulation
OITL	Operator-in-the-Loop
PHD NSWC	Port Hueneme Division, Naval Surface Warfare Center
POC	Point of Contact
SAT	SIAP Analysis Team
SE TF	System Engineering Task Force
SET	Systems Engineering Team
SIAP	Single Integrated Air Picture
SIPRN	Secret Internet Protocol Router Network
SME	Subject Matter Expert
TOR	Test Observation Report
TPSI	Time Space Position Indicator
TR	Technical Report
USJFCOM	United States Joint Forces Command
WG	Working Group

APPENDIX B: Lessons Learned Working Group Requirements Questionnaire Summary

Requirements Questionnaire Summary

	Air Force	USMC	MDA	NAVSEA PHD	Army	Totals	
1. The capability will be hosted on SIPRNET (NIPRNET presence is optional and requires additional effort to administer and maintain).	TRUE	TRUE		TRUE	FALSE	3 TRUE, 1 FALSE	
2. The capability must be in place (on-line in SIPRNET) NLT Dec 02 - Jan 03.	TRUE	TRUE		TRUE	TRUE	4 TRUE	
3. Funding for the administration and maintenance of the capability will only be available the first two years after going on line. It is SIAP's intent to transfer this responsibility to the hosting facility/agency.	TRUE	TRUE		TRUE	TRUE	4 TRUE	
4. Any changes/modifications to the capability will be approved by the SIAP Analysis Team SG first, then provided to the hosting facility for final approval and implementation (as required). Originator of change is responsible for funding.	TRUE	TRUE		TRUE	TRUE	4 TRUE	
5. Full new development requires high programmer and web designer efforts vs. modifying existing capability by application support contractors.	TRUE	TRUE		TRUE	TRUE	4 TRUE	
6. An existing capability is less flexible and requires more coordination to adopt changes.	FALSE	TRUE		TRUE	TRUE	3 TRUE, 1 FALSE	
7. Of the two options considered here, a new development will most likely re-use most of the sub-products (i.e. GUI, data structure) developed for the prototype. The GUI can be reused by both options.	TRUE	TRUE		FALSE	TRUE	3 TRUE, 1 FALSE	
8. Selecting an existing capability may imply technical/proprietary restrictions if modifications are required.	TRUE	TRUE		TRUE	TRUE	4 TRUE	
9. A new development with proper documentation will be easy to rehost as needed. Do not necessarily require long-term support by the developer.	TRUE	TRUE		FALSE	TRUE	3 TRUE, 1 FALSE	
10. Lower cost has greater importance than shorter schedule than functionality.	TRUE	TRUE		FALSE	FALSE	3 TRUE, 1 FALSE	
1. Data Entry: The ability to personally update records pertaining to my system on line.	Required	Required	Very Important	Required	Required	19	3.8
2. Data Structure: Database structure must coincide with systems currently used to document similar functions	Required	Very Important	Important	Not Required	Not Required	11	2.2
3. On-Line Data Entry: Ability to enter data from any remote site.	Very Important	Important	Very Important	Required	Very Important	15	3
4. Availability: System availability 24 hours a day, 7 days a week.	Very Important	Very Important	Very Important	Required	Important	15	3
5. Data Mining: ability to link or retrieve information from other databases or web sites	Required	Important	Important	Very Important	Not Required	12	2.4
6. Off-line Data Entry: Ability to do data entry offline and upload at a future time.	Required	Important	Important	Very Important	Important	13	2.6
7. Vetting: Ability to review and comment on items in the process and review cycle on-line.	Very Important	Required	Very Important	Required	Very Important	17	3.4
8: Help Desk: Direct access to user support desk on As-Required bases during normal business hours.	Required	Very Important	Important	Important	Important	13	2.6
9. Data Archiving: On-line ability to access and recovery data up to 1 year old	Required	Required	Very Important	Not Required	Important	14	2.8
10. Menu Driven: Pull down menus	Very Important	Very Important	Very Important	Important	Very Important	14	2.8

Requirements Ranking

Question	ARMY Rank	Weight	NAVY Rank	Weight	USMC Rank	Weight	USAF Rank	Weight	MDA Rank	Weight	Summary		New Order by Rank
1	7	5%	7	4%	10	1%	1	5%	4	15%	5.83		6
2	1	25%	1	35%	5	4%	8	15%	1	20%	3.36		2
3	3	15%	4	5%	2	21%	4	10%	2	20%	3.10		1
4	8	2%	8	4%	9	1%	2	5%	10	5%	7.42		8
5	9	1%	5	4%	4	17%	10	15%	6	5%	6.87		7
6	4	15%	6	4%	6	4%	3	10%	5	5%	4.87		5
7	6	6%	10	0%	8	1%	7	10%	8	5%	7.83		10
8	10	1%	2	25%	7	3%	9	15%	9	5%	7.49		9
9	5	10%	3	15%	1	33%	5	5%	7	5%	4.33		3
10	2	20%	9	4%	3	15%	6	10%	3	15%	4.70		4
		100%		100%		100%		100%		100%			